

Dr. Christiane Grimm

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Christiane Grimm  Google Scholar

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*I am a trained biophysicist with expertise in **protein engineering**, **patch-clamp electrophysiology**, **two photon optogenetics**, **scanless two-photon illumination** and **two-photon voltage imaging**. I develop genetic tools for the optical manipulation and interrogation of neuronal activity and translate their use to in vivo application employing targeted two-photon illumination strategies.*

Research experience

- 11/2025– **Junior group leader.**
now Multiscale Bioimaging Cluster of Excellence, Institute for Auditory Neuroscience, University Medical Center Göttingen, Germany
- 10/2020– **Postdoctoral researcher.**
10/2025 Group of Dr. Valentina Emiliani, Vision Institute, Paris, France
- 09/2018– **Postdoctoral researcher.**
06/2020 Group of Prof. Rafael Yuste, Columbia University in the state of New York, USA
- 06/2014– **PhD thesis**, "*Electrophysiological characterization of the microbial rhodopsins ReaChR and KR2 and their optogenetic potential*".
12/2018 Group of Prof. Peter Hegemann, Humboldt University Berlin, Germany
- 06/2013– **Master thesis**, "*Electrophysiological investigation of new channelrhodopsin variants engineered for optogenetic experiments with red light*".
05/2014 Group of Prof. Peter Hegemann, Humboldt University Berlin, Germany
- 02/2012– **Research assistant.**
01/2013 Supramolecular Lipid Structures group, Humboldt University Berlin
- 04/2011– **Bachelor thesis**, "*Characterization of a spin-labeled molecular rod using electron paramagnetic resonance spectroscopy*".
10/2011 Group of Prof. Andreas Herrmann, Humboldt University Berlin, Germany

Education

- 2014–2018 **PhD in experimental Biophysics**, Humboldt University Berlin, Germany.
- 2011–2014 **MSc in Biophysics**, Humboldt University Berlin, Germany.
- 2008–2011 **BSc in Biophysics**, Humboldt University Berlin, Germany.

Awards and Honors

- 06/2025 Invited talk FENS regional meeting 2025
- 07/2024 Invited talk GRC, Optogenetic Approaches to Understanding Neural Circuits and Behaviour
- 06/2024 Selected talk and travel award, Sculpted light in the brain
- 09/2023 Travel award, Howard Hughes Medical Institute (HHMI)
- 10/2020 Postdoc Fellowship from the German Research Foundation (DFG)
- 03/2018 Selected talk GRC, Photosensory receptors and Signal transduction

Publications

- 2024 **Grimm C***, Sims R R*, Tanese D, Mohamed Lafirdeen A S, Chan C Y, Faini G, Putti E, Del Bene F, Papagiakoumou E, Emiliani V "Two-photon voltage imaging with rhodopsin-based sensors", bioRxiv preprint, DOI: 10.1101/2024.05.10.593541
- 2024 Sims R*, Bendifallah I*, **Grimm C**, Mohamed Lafirdeen A S, Dominguez S, Chan C Y, Lu X, Forget B C, St-Pierre F, Papagiakoumou E, Emiliani V "Scanless two-photon voltage imaging", Nature Communications 15, DOI: 10.1038/s41467-024-49192-2
- 2022 Vierock J*, Peter E*, **Grimm C***, Rozenberg A, Chen I, Tillert L, Castro Scalise AG, Casini M, Augustin S, Tanese D, Forget BC, Peyronnet R, Schneider-Warme F, Emiliani V, Béjà O, Hegemann P "WiChR, a highly potassium-selective channelrhodopsin for low-light one- and two-photon inhibition of excitable cells", Science Advances 8 (49): eadd7729, DOI: 10.1126/sciadv.add7729
- 2019 Bando Y, **Grimm C**, Cornejo VH, Yuste R "Genetic voltage indicators", BMC Biology 17, DOI: 10.1186/s12915-019-0682-0
- 2019 Vogt A, Silapetere A, **Grimm C**, Heiser F, Ancina Möller, M , Hegemann P "Engineered Passive Potassium Conductance in the KR2 Sodium Pump", Biophysical Journal 116:1941-1951, DOI: 10.1016/j.bpj.2019.04.001
- 2018 **Grimm C**, Silapetere A, Vogt A, Bernal Sierra YA, Hegemann P "Electrical properties, substrate specificity and optogenetic potential of the engineered light-driven sodium pump eKR2", Scientific Reports 8:9316, DOI: 10.1038/s41598-018-27690-w
- 2017 Wietek J, Rodriguez-Rozada S, Tutas J, Tenedini F, **Grimm C**, Oertner TG, Soba P, Hegemann P, Wiegert JS "Anion-conducting channelrhodopsins with tuned spectra and modified kinetics engineered for optogenetic manipulation of behaviour", Scientific reports 7:14957, DOI: 10.1038/s41598-017-14330-y
- 2017 Vierock J, **Grimm C**, Nitzan N, Hegemann P "Molecular determinants of proton selectivity and gating in the red-light activated channelrhodopsin Chrimson", Scientific reports 7:9928, DOI: 10.1038/s41598-017-09600-8
- 2017 Kaufmann JCD*, Krause BS*, **Grimm C**, Ritter E, Hegemann P, Bartl FJ "Proton transfer reactions in the red light-activatable channelrhodopsin variant ReaChR and their relevance for its function", Journal of Biological Chemistry 292:14205-14216, DOI: 10.1074/jbc.M117.779629
- 2017 **Grimm C***, Vierock J*, Hegemann P, Wietek J, "Whole-cell Patch-clamp Recordings for Electrophysiological Determination of Ion Selectivity in Channelrhodopsins", Journal of visualized experiments (123), DOI: 10.3791/55497
- 2017 Krause BS*, **Grimm C***, Kaufmann CD, Schneider F, Sakmar TP, Bartl FJ, Hegemann P, "Complex Photochemistry within the Green-Absorbing Channelrhodopsin ReaChR", Biophysical Journal 112:1166-1175, DOI: 10.1016/j.bpj.2017.02.001
- 2015 Schneider F, **Grimm C**, Hegemann P, "Biophysics of Channelrhodopsin", Annual Review of Biophysics 44:167-186, DOI: 10.1146/annurev-biophys-060414-034014
- 2014 Serien D, **Grimm C**, Liebscher J, Herrmann A, Arbuzova A, "DNA-controlled aggregation of virus like particles - mimicking a tetherin-like mechanism", New Journal of Chemistry 38:5181-5185, DOI: 10.1039/C4NJ00724G
- 2013 **Grimm C***, Meyer T*, Czapla S*, Nikolaus J, Scheidt HA, Vogel A, Herrmann A, Wessig P, Huster D, Müller P, "Structure and dynamics of molecular rods in membranes: Application of a spin-labeled rod", Chemistry - A European Journal 19:2703-2710, DOI: 10.1002/chem.201202500

*equal contribution